Arterial Micro-Calcification is associated with Coronary Artery Calcium Score in HD Patients.

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Objectives:

We have reported that arterial micro-calcification (AMC) of vascular access has a negative impact on access patency and cardiovascular mortality in hemodialysis (HD) patients. Reasons behind increased cardiovascular mortality in AMC are not fully understood, but it is believed that aortic stiffness is a major contributing factor. Whereas, coronary artery calcification (CAC) is quite common in HD patients and it is known as predictor of future cardiovascular events and all cause mortality in HD patients.

The aim of this study was to explore the relationship between AMC and CAC in HD patients.

Methods:

One hundred HD patients who received vascular access operation were included in this study. The AMC was diagnosed by pathologic examination of arterial specimen by von Kossa stain, which was acquired during the operation. All patients underwent a multi-detector computed tomo graphy (MDCT) imaging procedure and coronary artery calcium score (CACS) was calculated.

Patients were classified into two groups, according to the CACS, as low (<100), in 40 patients, and high (≥100), in 60 patients. We compared CACS between the patients with and without AMC.

Results:

Mean age was 65.1 ± 12.7 years and the male gender was 63 (63.0%). The incidence of AMC was 60.0% (n=60). The mean CACS was 486.8 ± 857.6 (0-5674.1), and the median value was 161.2. Patients with the positive AMC group showed a significantly higher prevalence of diabetes (85.7% vs 45.5%, p=0.000). Positive AMC group showed high incidence of high CACS compared to negative AMC group (76.8% vs 38.6%, p=0.000). By binary logistic regression, high CACS was independently associated with positive AMC (OR 7.566, 95% CI 1.771-32.322, p=0.006).

Figure1. Histologic findings of arterial micro-calcification (AMC).

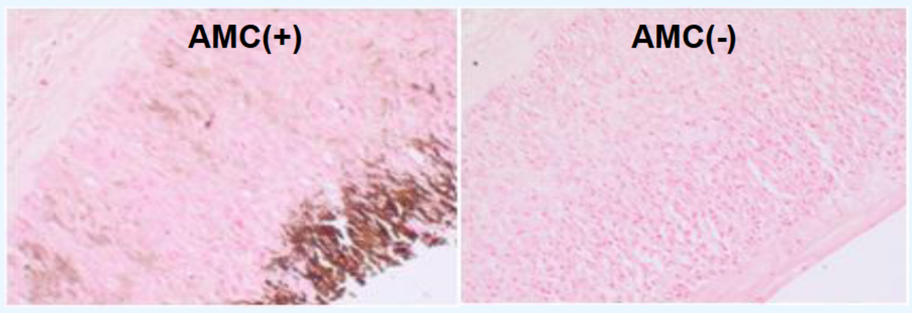

Table 1. Logistic regression report for AMC.

Parameters	OR**	95% CI	*p*-value
Univariate analysis			
Age	1.027	0.995-1.061	0.102
DM	7.200	2.770-18.714	0.000
CACS > 100	5.253	2.206-12.512	0.000
Multivariate analysis*			
CACS > 100	3.484	1.269-9.561	0.015

**OR : Odds Ratio
*Stepwise multiple regression analysis

Conclusions:

(1) The present study suggests that AMC is closely associated with CACS in HD patients.
(2) AMC have developed relatively early stage of CAC.
(3) Coronary artery calcification as well as aortic stiffness may contribute to increase cardiovascular mortality in patients with AMC.

References:

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